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| 09/739,531 | 12/15/2000 | Christopher L. Coleman | 10003980-1 | 2874 |

7590 01/29/2004

AGILENT TECHNOLOGIES
Legal Department, 51U-PD
Intellectual Property Administration
P.O. Box 58043
Santa Clara, CA 95052-8043

EXAMINER

ASSAF, FAYEZ G

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2872

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/739,531

Applicant(s)

COLEMAN ET AL.

Examiner

Fayez G. Assaf

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AW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-16 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 7 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 6, 8-13 and 18-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Kathman et al. (US 6,496,621 B1).

Regarding claims 1, 5, 9, 10, 11, 13, Kathman discloses an optical transceiver for coupling to an optical fiber comprising, a laser for emitting light (10 of Fig. 1), a transfer lens (see Fig. 3, note that the diffractive surfaces of elements 30 and 12 can be formed on the same surface, line 63 to line 65 of Col. 5) for transferring light emitted by the laser into the optical fiber (14 of Fig. 1 and Fig. 3), wherein the transfer lens includes a diffractive surface that is defined by a surface function (line 59 to line 60 of Col. 4, and line 55 of Col. 5),

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wherein the surface function includes a first phase function having angular symmetry (diffractive surface of 12 depends on the polar angle according to equation (2)) and/or with a second phase function having radial symmetry (line 55 of Col. 5) and a cusp region, wherein the cusp region has a discontinuous slope therein (i.e. the ring will have singularity at the center, line 58 of Col. 5). The combined phase functions provide favorable launch conditions and reflection management so that light reflected from the end of the optical fiber is not directed to a location at which light is emitted by the laser (line 25 to line 49 of Col. 5).

Regarding claim 6, 12, Kathman discloses the transfer lens providing favorable launch conditions so that light launched into the optical fiber avoids index anomalies along the axis of the optical fiber (claim 1, line 9 to line 11).

Regarding claims 8 and 18, Kathman discloses a packaging for housing the light source, wherein the diffractive surface (lens) is disposed in the housing (note that the light source is integral with diffractive element/coupler which are housed together, line 19 to line 20 of Col. 3).

Regarding claim 19, Kathman discloses employing semiconductor processing techniques to manufacture the diffractive surface (line 44 to line 46 of Col. 3).

Regarding claim 20, Kathman discloses adding a third phase function to the surface function (first term in equation (3)), wherein the third phase function is a lens function (line 50 of Col. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-4 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kathman.

Kathman discloses the claimed invention including the first phase being a spiral phase function expressed by the formula $\phi = m\theta$, where m is 3 (equation (2), line 39 to line 49 of Col. 4), and the radially symmetric terms having negative axicon function (line 56 of Col. 5). The reference is silent on the axicon function being conical. However, such phase function is well known in the art for its particular focusing properties in the depth of field.

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If not inherent, it would have been obvious, at the time the invention was made, to a person having ordinary skill in the art to provide the radially symmetric function with a conical function so as to provide focusing power. Furthermore, the disclosed particular parameters, which describe the cone phase region, do not serve as a basis for patentability as they can be achieved by routine experimentation.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to arrive at such parameters, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Allowable Subject Matter

Claims 7 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 7 and 17 are allowable over the prior art for at least the reason that the prior art fails to teach or reasonably suggest the diffractive surface receiving and collimating the light originating from the light source/laser.

Response to Arguments

Applicant's arguments filed 09/18/2003 have been fully considered but they are not persuasive.

Regarding claims 1, 9 and 19, Applicant argues that the reference to Kathman fails to teach the first phase function, because the arctan function is a function of both x and y. The Examiner notes that equation 2 is in Cartesian form; however, it results in $\phi = m\theta$ when written in polar coordinates.

Regarding claims 1 and 9, Applicant argues that Kathman fails to teach or suggest the second phase function having radial symmetry. The Examiner respectfully disagrees, because the language of the claims only requires the surface function to include a phase function having radial symmetry. Kathman expressly discloses the "lens function having radially symmetric terms" and further teaches an "axial singularity", where the slope is evidently discontinuous (see the 102 rejection.) In essence, the first term of equation 3 teaches radially symmetric function in combination with other functions.

Regarding claim 20, Applicant argues that Kathman fails to teach or suggest "the third phase function including one of a lens phase function, an aberration control phase function, a prism phase function, and a grating phase function." The

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Examiner notes that the language of the claim only requires the phase function to include one of said functions. Kathman expressly teaches a lens function (see 102 rejection.)

Regarding the 103 rejection of claims 2-4 and 14-16, based on an argument similar to the argument of the 102 rejection of claims 1, 9 and 19, Applicant has concluded that the claimed invention has been improperly used as an instruction manual to piece together the teachings of Kathman reference so that the claimed invention is rendered obvious. The Examiner respectfully disagrees, because the substance of the 103 rejection has not specifically been addressed. For example, it is still unclear why the particular parameters, which describe the cone phase region are inventive over the prior art, and why such specific values cannot be achieved by routine experimentation. Applicant has not attributed any criticality to such values.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include

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knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fayez G. Assaf whose telephone number is (571) 272-2307. The examiner can normally be reached on 8-5 M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

FA

Fayez Assaf
1/22/2004



DREW DUNN
SUPERVISORY PATENT EXAMINER